

CLAIM LISTING

Please find below a complete listing of presently pending claims with status identifiers. This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A medical probe device comprising:

~~an ultrasound transducer housing comprising an ultrasound transducer and a base, the ultrasound transducer housing defining a probe guide opening through the base assembly, said assembly including a housing having a base and defining a probe guide opening therethrough, said housing receiving a transducer therewithin; and~~

~~a sterile sterilizable seal removably co-operable with said transducer assembly, said seal including comprising a sterile probe guide, wherein the sterile probe guide is removably attachable to the ultrasound transducer housing, and wherein upon attachment of the sterile probe guide to the ultrasound transducer housing, the sterile probe guide is received into the probe guide opening for receipt in said probe guide opening, and said seal including a sleeve adapted to cooperate with said housing to define a sterile barrier between said housing and an external field, said seal when in cooperation with said housing providing said probe guide within said probe guide opening and providing an unimpeded passageway through said seal for passage of a probe therethrough; and~~

a clamp being adapted to secure a probe in said probe guide at a predetermined position.

2. Cancelled.

3. (Currently Amended) The medical probe device of claim [[2]]1, wherein the sterile sleeve comprises a pliant material.

4. (Currently Amended) The medical probe device of claim [[2]]1, wherein the sterile sleeve comprises a formed thermoplastic material non-pliable first piece and a non-pliable second piece removably attachable to one another.

5. (Currently Amended) The medical probe device of claim 1, wherein the medical probe device is a linear, noninvasive medical probe device comprising

ultrasound transducer is a linear ultrasound transducer and the ultrasound transducer housing is non-invasive.

6. (Original) The medical probe device of claim 5, wherein the probe guide opening is perpendicular to the base of the ultrasound transducer housing.

7. (Currently Amended) The medical probe device of claim 1, wherein the ~~medical probe device is a noninvasive medical probe device comprising an ultrasound transducer defining defines an arcuate profile and the ultrasound transducer housing is non-invasive.~~

8. (Original) The medical probe device of claim 7, wherein the probe guide opening is perpendicular to the tangent of the base at the probe guide opening.

9. Cancelled.

10. (Currently Amended) The medical probe device of claim 1, further comprising a monitor, wherein the ultrasound transducer is connected connectable to [[the]] a monitor for displaying a sonogram.

11. (Currently Amended) The medical probe device of claim 10, wherein the path of a probe guided through the sterile probe guide defines a line that is parallel to the plane of the sonogram.

12. (Currently Amended) The medical probe device of claim 10, further comprising a detector for detecting motion of a probe in the sterile probe guide, the detector being in communication with a processing unit for displaying information concerning the motion of a probe in the sterile probe guide.

13. (Currently Amended) The medical probe device of claim 12, wherein the information is displayed as [[an]] a computer generated image of a virtual probe on the monitor.

14-27. Cancelled.

28. (Currently Amended) A sterile sterilizable seal for use in a medical procedure, said seal comprising a sterile probe guide for receipt of a probe therethrough, wherein the sterile probe guide is removably attachable within a probe guide opening defined by an ultrasound transducer housing to provide said probe guide being adapted for receipt in a probe guide opening defined by an ultrasound transducer

housing, said probe guide providing an unimpeded passageway through said seal, said seal further comprising a sleeve for substantially enclosing said transducer housing to define a sterile barrier between a probe in the sterile probe guide and the ultrasound transducer housing said housing and an external field.

29. Cancelled.

30. (Currently Amended) The sterile sterilizable seal of claim [[29]]28, wherein at least a portion of the sterilizable the sterile sleeve comprises is formed of a pliant material.

31. (Currently Amended) The sterile sterilizable seal of claim [[29]]28, wherein the sterile sleeve comprises further comprising a base, adapted to conform to the base of an ultrasound transducer housing when the sterile probe guide is attached within the probe guide opening defined by the ultrasound transducer housing.

32. Cancelled.

33. (Currently Amended) The sterile sterilizable seal of claim 28, wherein the sterile probe guide comprises separable top and bottom portions removably attachable to one another.

34-41. Cancelled.

42. (Currently Amended) A method for guiding a percutaneous probe to an internal target a percutaneous target comprising:

providing an ultrasound transducer assembly, said assembly including housing comprising an ultrasound transducer for transmitting an ultrasonic beam and receiving reflections of the ultrasonic beam, the ultrasound transducer housing assembly further including a housing defining a probe guide opening therethrough;

providing a removably attachable sterile seal[[,]] about said transducer assembly, the sterile seal comprising a sterile probe guide for receipt in said probe guide opening and a sleeve adapted to cooperate with said housing;

attaching the sterile seal to the ultrasound transducer assembly with the probe guide being received in the probe guide opening and providing an unimpeded passageway through said seal for passage of a probe therethrough, the sleeve in

cooperation with the ultrasound transducer housing defining a sterile barrier between the ultrasound transducer housing and an external field;

~~receiving the sterile probe guide within the probe guide opening; and~~
~~guiding a probe through the sterile probe guide to a predetermined percutaneous location target; and~~

clamping the probe in the probe guide when the probe is at a predetermined desired location.

43. (Currently Amended) The method of claim 42, further comprising forming a sonogram of the percutaneous location target on a monitor in response to the reflections of the ultrasonic beam.

44. (Currently Amended) The method of claim 43, wherein the path of the probe guided through the sterile probe guide defines a line that is parallel to the plane of the sonogram.

45. (Currently Amended) The method of claim 44, ~~wherein the path is shown further comprising forming a virtual indication of the location of the probe on the sonogram.~~

46. (Original) The method of claim 43, further comprising:
creating a data stream in response to motion of the probe in the probe guide; and

forming a real time image of information contained in the data stream.

47. (Currently Amended) The method of claim 46, wherein the real time image is an image of a virtual probe overlaid overlaid on the sonogram.

48. Cancelled.

49. (Currently Amended) The method of claim 42, wherein the percutaneous target location is the lumen of a blood vessel.

50. (Original) The method of claim 42, wherein the method is carried out by a single operator.

51. Cancelled.

52. (Currently Amended) A method of guiding a probe to a target percutaneous location comprising:

providing an ultrasound transducer ~~housing comprising assembly, said assembly including~~ an ultrasound transducer for transmitting an ultrasonic beam in a field and receiving reflections of the ultrasonic beam, the ultrasound transducer ~~assembly further including~~ a housing defining a probe guide opening therethrough;

guiding a probe through the probe guide opening and into the field of the ultrasonic beam;

forming a sonogram in response to the reflections received by the ultrasound transducer;

detecting the motion of the probe in the probe guide opening;

creating a data stream in response to the detected motion of the probe;

forming [[an]] a real time image of the location of the probe that is in the field of the ultrasonic beam, wherein the image is formed on the sonogram from the information contained in the data stream.

53. (Original) The method of claim 52, wherein the motion of the probe in the probe guide defines a line that is parallel to the plane of the sonogram.

54. The method of claim 52, further comprising:

~~contacting the target with the end of the probe; and~~

clamping the probe in the probe guide.

55. Cancelled.

56. (New) The medical probe device of claim 1, wherein the clamp is an integral part of the sterilizable seal.

57. (New) The sterilizable seal of claim 28, further comprising a clamp associated with the probe guide for selective securement of a probe at a predetermined location within said probe guide.

58. (New) The sterilizable seal of claim 28, wherein the sleeve is formed of a non-pliable first portion and a non-pliable second portion removable attachable to one another, one portion of the sleeve being continuous from one end of the probe guide.

59. (New) The method according to claim 52, further comprising:

providing a sterile seal about said transducer assembly, the seal comprising a probe guide for receipt into said probe guide opening, a sleeve adapted to cooperate with said housing, and a clamp;

attaching the sterile seal to the ultrasound transducer assembly with the probe guide being received in the probe guide opening and providing an unimpeded passageway through said seal for passage of a probe therethrough, the sleeve at least substantially enclosing the ultrasound transducer housing and defining a sterile barrier between the ultrasound transducer housing and an external field.

60. (New) The method of claim 59, in which the motion of the probe in the probe guide opening is detected by a motion detector located on the sterile seal.

61. (New) The method of claim 52, in which the motion of the probe in the probe guide opening is detected with a motion detector that is integral to the ultrasound transducer housing.

62. (New) A medical probe device comprising:

an ultrasound transducer assembly, said assembly including a housing defining a probe guide opening therethrough, said housing receiving a transducer therewithin;

a sterilizable seal removably co-operable with said transducer assembly, said seal including a probe guide for receipt into said probe guide opening, and said seal including a sleeve adapted to cooperate with said housing to define a sterile barrier between said housing and an external field, said seal when in cooperation with said housing providing said probe guide within said probe guide opening and providing an unimpeded passageway through said seal for passage of a probe therethrough; and

a motion detector for detecting motion of a probe in the probe guide.

63. (New) The medical probe device of claim 62, in which the motion detector is incorporated into the sterilizable seal.

64. (New) The medical probe device of claim 62, in which the motion detector is integral to the ultrasound transducer assembly.

65. (New) The medical probe device of claim 62 wherein the sleeve comprises a pliant material.

66. (New) The medical probe device of claim 62, wherein the sleeve comprises a non-pliable first piece and a non-pliable second piece removably attachable to one another.
67. (New) The medical probe device of claim 62, wherein the ultrasound transducer is a linear transducer and the ultrasound transducer housing is noninvasive.
68. (New) The medical probe device of claim 62, wherein the ultrasound transducer defines an arcuate profile and the ultrasound transducer housing is noninvasive.
69. (New) The medical probe device of claim 62, wherein the ultrasound transducer is connectable to a monitor for displaying a sonogram and the motion detector is connectable to the monitor for displaying a computer generated image of a probe.
70. (New) A medical probe device comprising:
an ultrasound transducer assembly, said assembly including a housing defining a probe guide opening therethrough, said housing receiving a transducer therewithin;
a sterilizable seal removably co-operable with said transducer assembly, said seal including a probe guide for receipt into said probe guide opening, said seal including a sleeve adapted to cooperate with said housing to define a sterile barrier between said housing and an external field, said seal including a clamp for securing a probe in said probe guide, said seal when in cooperation with said housing providing said probe guide within said probe guide opening and providing an unimpeded passageway through said seal for passage of a probe therethrough; and
a motion detector for detecting motion of a probe in the probe guide.
71. The medical probe device of claim 70, in which the motion detector is located on the sterilizable seal.
72. The medical probe device of claim 70, in which the motion detector is integral to the ultrasound transducer housing.
73. The medical probe device of claim 70, wherein the sleeve comprises a pliant material.

74. The medical probe device of claim 70, wherein the sleeve comprises a non-pliable first piece and a non-pliable second piece removably attachable to one another.

75. The medical probe device of claim 70, wherein the ultrasound transducer is connectable to a monitor for displaying a sonogram and the motion detector is connectable to the monitor for displaying a computer generated image of a probe.

76. A method for guiding a percutaneous probe to percutaneous location comprising:

providing an ultrasound transducer assembly, said assembly including an ultrasound transducer for transmitting an ultrasonic beam and receiving reflections of the ultrasonic beam, said ultrasound transducer assembly further including a housing defining a probe guide opening therethrough;

providing a sterile seal about said transducer assembly, the seal comprising a probe guide for receipt into said probe guide opening, a sleeve adapted to cooperate with said housing, and a clamp;

attaching the sterile seal to the ultrasound transducer assembly with the probe guide being received in the probe guide opening and providing an unimpeded passageway through said seal for passage of a probe therethrough and the sleeve defining a sterile barrier between the ultrasound transducer housing and an external field;

guiding a probe through the probe guide and into the field of the ultrasonic beam such that the tip of the probe approaches a predetermined percutaneous location;

forming a sonogram in response to the reflections received by the ultrasound transducer;

detecting the motion of the probe in the probe guide opening;

creating a data stream in response to the detected motion;

forming a real time image of the probe that is in the field of the ultrasonic beam, wherein the image is formed on the sonogram from the information contained in the data stream; and

securing the probe in the probe guide by use of the clamp.